Parental loss and offspring mortality risk:

Does the timing of parental death affect a child's post-reproductive survival?

Robyn Donrovich and Koen Matthijs, Centre for Sociological Research

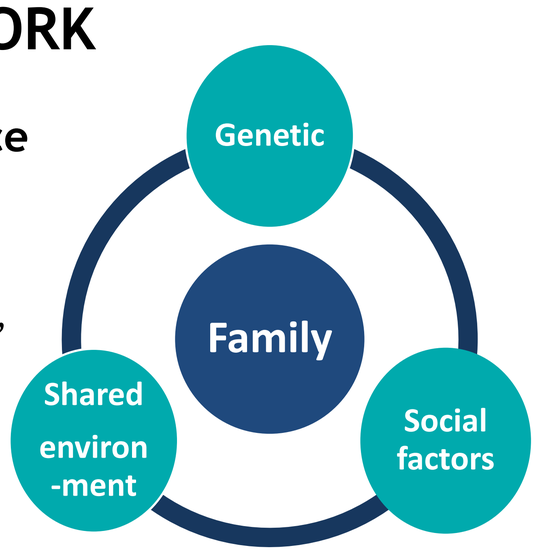
INTRODUCTION

Given our limited knowledge about the short and long-term impact of parental circumstances on child mortality risk in later life, the aim of this study is to isolate the relationship between parental characteristics, timing of parental death, and offspring post-reproductive survival chances.

THEORETICAL FRAMEWORK

Familial effects heavily influence individual mortality risk

Genetic - inheritance of longevity
Shared environment - household factors, common exposures
Social factors - lifestyle, relationships, demographic behaviors



Life course

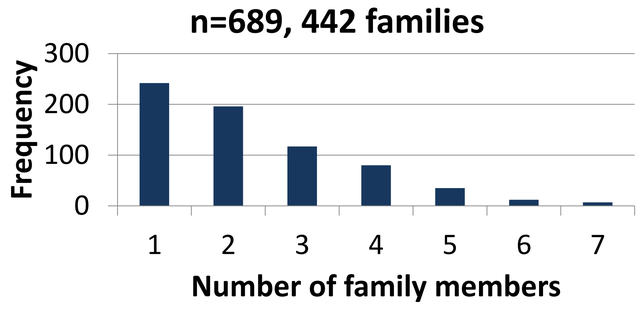
A life course perspective is used as familial effects, circumstances, and relationships begin at birth and change and develop across one's life course.

MATERIALS AND METHODS

Data

Data stems from the COR*-database consisting of vital registrations and population registers from the Antwerp district (1846-1920). Data was extracted and 'reconstructed' into life courses linking individuals to family members both in and outside of the household.

Figure 1. Number of family representatives n=689, 442 families



Covariates

- **Fixed:** sex, birth year, mother and father ages at birth, birth order, Research person (RP)'s age at father and mother deaths (before RP age 45), number of children, occupation, number of brothers and sisters
- **Time-varying (from age 45):** civil status, mother and father death indicators

Methods

Survival analysis using **Gompertz models,** including **shared frailty,** was conducted for **689** RPs who were followed from age 45 until death or end of observation.

RESULTS

Table 1. Relative risks of mortality over age 45 and standard errors for men and women, n=689

	RR	SE		RR	SE
Sex (ref: female)			**Age at father's death (ref: <20)**		
Male	**1,48****	0,21	20-29	**1,32**	0,4
Birth year	**0,98***	0,005	30-44	**1,12**	0,3
Mother age at birth (ref: < 20)			**Birth order (ref: only child)**		
20-29	**2,02**	1,1	1st born	**1,5**	0,56
30-39	**2,13**	1,2	2nd born	**2,27***	0,83
40+	**3,10**$^{+}$**	1,8	3rd+ born	**2,44****	0,95
Father age at birth (ref: < 25)			**Number of sisters (ref: 0)**		
25-34	**1,98***	0,63	1	**0,75**	0,14
35-44	**1,31**	0,46	2+	**0,67***	0,13
45+	**1,17**	0,51	**Mother died indicator (ref: no)**		
Age at mother's death (ref: < 20)			Yes	**5,78*****	2,1
			Father died indicator (ref: no)		
20-29	**1,46**	1,2			
30-44	**1,66**	1,3	Yes	**2,85**$^{+}$**	1,5

Standardized for age, number of brothers, number of children, occupation, and civil status

*** p < 0.001 ** p < 0.01 * p < .05 + p < 0.1

Table 2. Relative risks of mortality over age 45 by sex and time-varying mother death indicator

	Men		Women	
	RR	**SE**	**RR**	**SE**
No	**1,49****	0,22	**1**	
Yes	**7,79*****	3,6	**6,85****	3,8

Standardized for age and all covariates
*** p < 0.001 ** p < 0.01 * p < .05 $^{+}$ p < 0.1

Table 3. Relative risks of mortality over age 45 by time-varying parental death indicators

	RR	SE
No parents die	**1**	
Mother dies	**7,30*****	2,7
Father dies	**5,13****	2,88
Both die	**4,83**	5,33

Standardized for age and all covariates
*** p < 0.001 ** p < 0.01 * p < .05 $^{+}$ p < 0.1

KEY FINDINGS

- Parental deaths in early life have insignificant lasting effects on post-reproductive mortality
- Men and women are impacted similarly by parental death in later life
- Mother death at RP ages 45+ is more strongly associated with offspring mortality than father death
- Being born to the oldest mothers relates to significantly higher mortality risk (more than 3 times relative to young mothers)
- The unmarried who experience their mother's death after age 45 experience significant, very high excess risk (not presented), representing a particularly vulnerable social class